

FAQ*: Snow Loads

Question: I noticed that the snow loads have increased significantly in 7th Edition *One- and Two- Family Dwelling Code* compared to what they used to be in the 6th edition of the code per Chapter 36. Can you explain this and also provide some guidance on how rafter spans are determined and if the method is different than what was done using the 6th edition?

Answer: The BBRS voted on December 11, 2007 to lower the range of snow loads for the *One- and Two- Family Dwelling Code* to 25 - 50 psf. The range in the 6th edition is 25 to 40 psf. So some communities may see significant (25%) increases in snow loads. The BBRS is moving to adopting national codes and the snow loads that were approved reflect the loads shown in the IRC 2003.

For a users of the code who wants to “prescriptively” choose a rafter for a particular snow load the methodology is similar to the 6th edition in that one may go directly to the family of tables (5802.5) and chose a rafter design based on Pg (ground snow load), span, spacing, species, and grade. The BBRS has approved a code change which allows one to use the on-line Span Calculator <http://www.awc.org/calculators/span/calc> to choose a rafter design.

The following slides in this file:

- give some background on why lower loads were approved by the BBRS
- show some comparisons of rafter designs using the 6th and 7th editions

* Answers to FAQs are opinions of the BBRS Staff and do not reflect official positions or code interpretations of the BBRS.

Snow Loads 7th Proposed

- 6th edition snow load range is 25 to 40 psf
- 7th edition snow load range is 35 to 65 psf (+63%)
- Effective January 1, 2008 7th edition range is 25 to 50 psf (+25%)
 - Justification
 - No evidence for widespread roof failures
 - Derived from IRC 2003 National Snow Load Map. Maximum value set at 50 psf which is consistent with CT and RI methodology, i.e. both states set P_g at 30 psf although IRC Map shows 35 (RI) and 40 (CT) psf regions.

Snow Loads 7th (P_g) vs. 6th (P_f)

- For the maximum basic snow load (P_f) of 40 psf what is the maximum clear span (using both $L/180$ and $L/240$) allowed for a:
 - 2x8, Select Structural Grade, Doug Fir-Larch (North)
 - 2x8, No. 2, Hem-Fir (North)
- How does this compare to the 7th using $P_g = 40$ psf?

Rafter Span Comparison Using 2x8s

Snow Load ¹	Species	Grade (P_b and E)	Defl	6 th Allowable Clear Span (Dead Load = 10 psf)	7 th Allowable Clear Span ² (Dead Load = 10 psf)
$P_f=40$ or $P_g=40$	Doug Fir-Larch (North)	Select Structural (2065 and 1.9E6 psi)	L/180	~ 19'0" for 12" spacing	18'10" for 12" spacing
$P_f=40$ or $P_g=40$	Doug Fir-Larch (North)	Select Structural (2065 and 1.9E6 psi)	L/240	~ 13' 5" for 24" spacing	13' 7" for 24" spacing
$P_f=40$ or $P_g=40$	Hem-Fir (North)	No. 2 (1585 and 1.6E6 psi)	L/180	~ 14' 6" for 16" spacing (16'9" for 12")	14' 5" for 16" spacing (16'8" for 12")
$P_f=40$ or $P_g=40$	Hem-Fir (North)	No. 2 (1585 and 1.6E6 psi)	L/240	~ 14' 6" for 16" spacing (16'3" for 12")	~ 14' 5" for 16" spacing (16'2" for 12")

1. P_f per the 6th and P_g per the 7th
2. As calculated by the AF&PA Rafter Span Calculator

...6th and 7th produce same spans for these examples



What if it was 30* and is now 40 or 50

*Tyngsborough for example

	Snow Load	Species	Grade	Defl	Allowable Clear Span ¹ (D.L. = 10 psf)
Was in 6th...	P _g =30	Doug Fir-Larch (North)	No. 2	L/180	14' 11"
Was in 7 th ...	P _g =55	Doug Fir-Larch (North)	No. 2	L/180	11' 8" <small>(14' 9" Select Structural)</small>
	P _g =40	Doug Fir-Larch (North)	No. 2	L/180	13' 4"
Effective Jan. 1, 2008	P _g =50	Doug Fir-Larch (North)	No. 2	L/180	12' 2"
	P _g =50	Doug Fir-Larch (North) Hem-Fir	Select Structural Select Structural	L/180 L/180	15' 4" 15' 0"

Can do it with a better grade

...and span & spacing have to stay at about 15 feet & 16"?!

1. As calculated by the AF&PA Rafter Span Calculator